DRIVES®

OIL FIELD CHAIN PRODUCTS

TIMKEN

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TIMKEN DRIVES LLC

Since 1959, Timken Drives has become a leading manufacturer of ANSI precision roller chain, pintle chain, agricultural conveyor chain, engineering class chain and auger products. The company's markets include North America, South America, Europe, Asia, Africa and Australia.

Today, Timken Drives employs more than 450 team members with manufacturing facilities exceeding 400,000 square feet. Our company's philosophy is shared on the following page and expresses our objectives.

COMPANY PHILOSOPHY

Each employee, in respecting his own dignity, must respect the rights and privileges of his fellow employees, including the necessity of Timken Drives to achieve its fair and reasonable objectives.

- **Citizenship.** We will conduct our business in a professional and ethical manner with high integrity.
- **Golden Rule.** We believe we must treat others as we would like to be treated. This applies to employees, shareholders, customers and suppliers.
- **People.** People are our most important asset. We believe that by building our people, we build our company. We will promote teamwork and active participation in decision-making.
- **Be the Best.** We believe we must strive each day to be the best in quality and service. Keep it simple. Strive each day to bring "what is" closer to "what it should be."
- **Profit.** Profit is a measurement of accomplishment.
- **Communication.** We believe effective communication is important to all employees, customers and suppliers. We support the open door and open floor policy.

ISO 9001 REGISTERED

The American Petroleum Institute's (API) Quality Plus program goes beyond the ordinary to the extraordinary. The API Quality Plus program confirms that Timken Drives meets some of the strictest quality standards established to date.

Timken Drives' registration to API Spec Q1 combined with ISO 9001 certifies a world-class quality system. According to ISO, this certification shows "demonstrated ability to consistently provide products that meet customer and applicable statutory and regulatory requirements." It means if you meet these requirements, you've shown you live up to the expectations of one of the most demanding industries in the world – the oil and natural gas industry.

Timken Drives manufactures quality products without compromise.

ISO 9001 REQUIRES A CONTINUOUS TEAM EFFORT

Home Office & Manufacturing

Fulton, Illinois 61252-0350
Phone 1-800-435-0782
Fax 1-815-589-4420

Service Center Locations

Fulton, Ill.
Crossville, Tenn.
Sparks, Nev.
Houston, TX
Brampton, Ontario, Canada
Denver, Colo.
Lakeland, Fla.

Member of:

Conveyor Equipment Manufacturers Association (CEMA)
Association of Equipment Manufacturers (AEM)
Power Transmission Distributors Association (PTDA)
American Petroleum Institute (API) Standards Committee

Please contact your sales representative with questions. Visit www.drivesllc.com for the nearest location.

HIGH-PERFORMANCE ROLLER CHAIN IN STOCK AND WAITING FOR YOU TO PUT IT TO THE TEST

Timken Drives roller chain is manufactured in Fulton, Ill., to meet or exceed ANSI/ASME standard B29.1 and the American Petroleum Institute's 7F8 requirements. Timken Drives is a leader in the industry that produces roller chain products for some of the world's toughest applications:

- Horizontal and directional blast hole drilling
- Deep hole rigs
- Cooling and transfers
- Coil tubing injectors
- Offshore and land based oil/natural gas drilling
- Draw works
- Rotary tables
- Cat shaft
- Transmissions pumps
- Tubing injection
- Workover service rigs
- Drill string compensators

100 YEARS OF KNOWLEDGE

100 years of advanced engineering knowledge and experience adds up to one of the best U.S.-made roller chains produced for the energy industry today. Timken Drives chains are built to B29.1 ANSI specifications to fit your existing sprockets and the oil field industry's current API 7F8 standards to meet your most demanding applications. Whether you're looking to solve an existing roller chain drive problem or just want great value with domestically manufactured chain, our high-performance roller chains will be in stock waiting for you to put them to the test.

TABLE 1. DRIVES ROLLER CHAIN

Chain No.	Pitch P	Min. Roller Link Inside Width W	Roller Diameter D	Average Weight	Riveted	Cottered
		in.	in.	lbs.		
35	0.375	0.189	0.200	0.141	STD	–
40	0.500	0.313	0.313	0.420	STD	–
50	0.625	0.376	0.400	0.713	STD	–
60	0.750	0.500	0.469	1.067	STD	STD
80	1.000	0.627	0.625	1.868	STD	STD
100	1.250	0.755	0.750	2.801	STD	STD
120	1.500	1.000	0.875	4.135	STD	STD
140	1.750	1.000	1.000	5.136	STD	STD
160	2.000	1.250	1.126	6.603	STD	STD
180	2.250	1.400	1.406	9.100	MTO	STD
200	2.500	1.490	1.562	10.900	MTO	STD
240	3.000	1.864	1.875	16.400	MTO	STD

Dimensions are subject to change. Contact Timken Drives to obtain certified prints for design and construction.

NOTE:

- Heavy series (sizes 60H-240H) and multi-strand chains (sizes 40-240) available.
- Corrosion-resistant finishes for components available upon request.
- Offsets not recommended. Please contact Timken Drives engineering.
- Timken Drives engineering recommends changing out sprockets and roller chain at the same time.

ABOUT THIS MANUAL

We are committed to providing our customers with service and quality.

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

Timken Drives products are sold subject to Timken Drives LLC terms and conditions of sale, including its limited warranty and remedy.

Please contact your sales representative with questions.

⚠ WARNING
Failure to observe the following warnings could create a risk of death or serious injury.

Proper maintenance and handling practices are critical.

Always follow installation instructions and maintain proper lubrication.

⚠ CAUTION
Failure to follow these cautions may result in property damage.

Use only subassemblies for assembling chain strands.

Do not use individual chain components and do not mix subassemblies from different chain manufacturers.

Do not reuse sections from damaged chains. Damage from overloading or yielding may be present though not apparent. Do not use worn chain or install new chain on worn sprockets.

Any warnings for this product line will be posted on www.timken.com/warnings.

PREMIUM OIL FIELD CHAIN

Roller chains used in the oil and natural gas industries are subjected to some of the highest loads and harshest operating conditions. We produce our oil field energy chains with the same attention to detail that goes into all of our products, but these chains are also subjected to performance testing in accordance with the latest API (American Petroleum Institute) Specification 7F.

The quality of our roller chains is demonstrated by examining the label on our box, which carries the API monogram. Only those companies with quality systems that have been approved and audited by API are authorized to display this symbol of excellence.

PREMIUM OIL FIELD CHAIN FEATURES AND BENEFITS FATIGUE/WEAR RESISTANT CHAINS

ALL BALLIZED PLATES

Ballized pin plate, middle bar and bushing plate holes made to precision tolerances provide maximum bearing area for optimum press fits improving fatigue life and working loads.

Fig. 1. All ballized plates.

WIDE WAISTED LINK PLATES

Shotpeened wide waisted link plates are manufactured with maximized ball heights from special alloy steels for added strength. The wide link plate profile improves stress distribution leading to improved fatigue resistance and enhanced performance.

Fig. 2. Wide wasted link plates.

THROUGH-HARDENED SHOTPEENED PINS

Through-hardened pins are precision hardened and shotpeened to provide maximum performance in demanding applications. These pins are produced to deliver extended wear and protection from unpredictable overloads.

Fig. 3. Through-hardened shotpeened pins.

SPECIAL HOOK COTTER

A full-hardened hook cotter provides greater link-plate support and up to twice the shear strength of conventional short split cotters. The easily installed hardened hook cotter is designed to retain position in high-vibration applications.

Fig. 4. Special hook cotter.

COATED T-PIN

High-shear T-pins resist corrosion and are designed to retain position in the most extreme applications. Sizes 200, 264, 240.

Fig. 5. Coated T-pin.

Timken Drives engineering and the American Chain Association (ACA) recommend sprockets and roller chain be changed out at the same time.

PREMIUM OIL FIELD CHAIN FEATURES AND BENEFITS FATIGUE/WEAR RESISTANT CHAINS

SOLID ROLLERS

Shotpeened solid rollers provide maximum sprocket contact, shock resistance and toughness.

FACTORY PRE-LOADED AT 50 PERCENT MUTS

Timken Drives chains are preloaded to 50 percent of minimum ultimate tensile strength (MUTS) which is especially important for applications involving fixed center-to-center sprockets without take-ups. Applications can withstand shock loads up to 50 percent of the chain's tensile strength without premature elongation.

HOT-DIP LUBRICATION

Industry leading production technology is employed to hot-dip each chain. The working life of the chain is greatly extended compared to cold-dip methods. Timken Drives uses proprietary lubricants designed to penetrate and coat the bearing surface between pin and bushing.

AVAILABLE OPTIONS

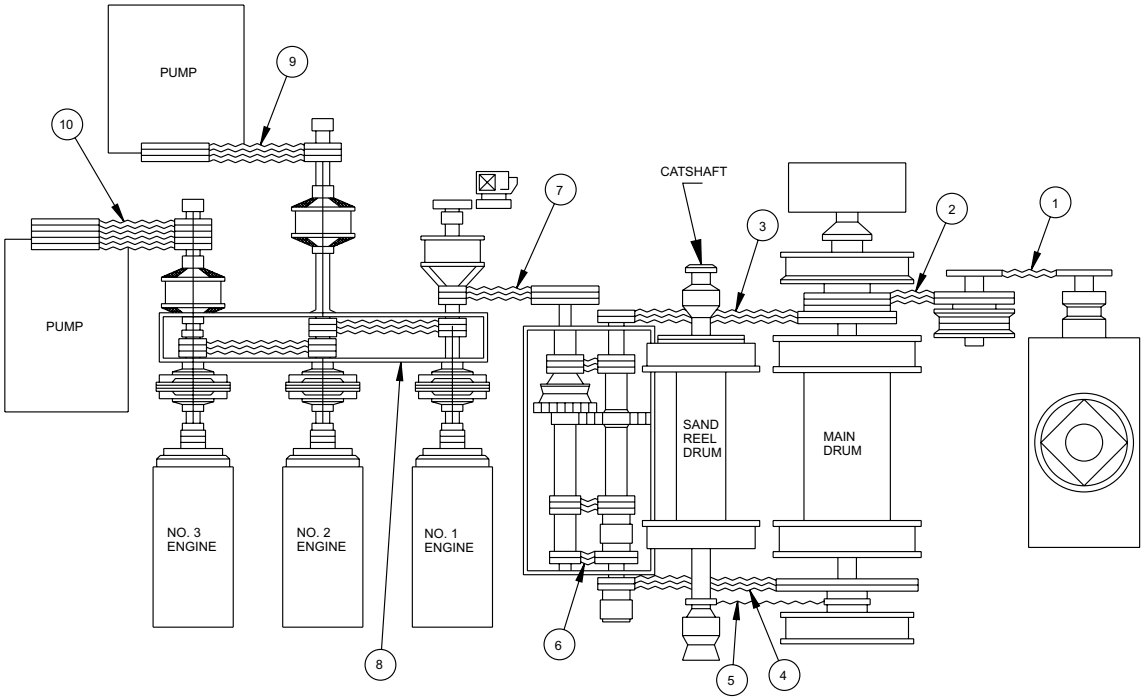
ADVANCED CORROSION RESISTANT PLATING

Advanced corrosion resistant plating is available upon request. This plating process combines three metals that are mechanically applied to chain components before assembly. This technology is superior to other existing plating processes in providing corrosion resistance.

SPECIALIZED COATINGS

Specialized coatings, also available upon request, are designed to improve wear life, combat corrosion, and simplify your maintenance. Contact your Timken Drives engineer with questions.

PREMIUM OIL FIELD CHAIN PRODUCTS
CHAIN SELECTION GUIDE



For chain selection please refer to Timken Drives Precision Roller Attachment Chain Products catalog or contact our engineering department.

TABLE 2. DRIVES CHAIN TABLE

Chain Drive	Rig Horsepower						
	4000	3000	2000	1500	1000	750	500
1. Rotary Table	160-2	160-2 264-1	160-2	160-2 140-2	140-2 160-1	140-2 160-1	140-1 120-1
2. Rotary Countershaft	160-2	160-2 264-1	160-2	160-2 140-2	140-2 160-1	140-2 160-1	140-1 120-1
3. High Drum	240-3	264-3	160-4	160-3	140-3 160-2	160-2 140-2	120-3 140-2
4. Low Drum	240-3	264-3	160-4	160-3	140-3 160-2	160-2 140-3	120-3 140-2
5. Cat Shaft	160-2	160-2 264-1	160-2	160-1 140-2	160-1 140-2	160-1 140-2	140-1 120-1
6. Transmission	140-8	160-4 264-3	160-4 160-3	160-3	160-2 140-3	140-2	120-2 100-3
7. Drawworks Input	140-8	120-8	120-6	120-4	120-3 120-4	100-4	100-3 100-4
8. Compound	140-8	120-8	120-6	120-4	120-3 120-4	100-4	100-3
9. & 10. Mud Pump Drives	140-8	120-8	120-8 120-6	120-6 120-4	120-4 120-3	100-6 100-4	100-4 100-3

NOTE: Size 264 roller chain provides greater tensile strength/working load and replaces 200H chain.

80-1 THROUGH 80-8
100-1 THROUGH 100-8

- Available in carbon steel.
- Cut-to-length chain available.
- Corrosion-resistant finishes for components available upon request.
- Offsets not recommended. Please contact Timken Drives engineering.
- Specially designed hook cotters used on sizes 80 and 100.
- Heavy chain series available/MTO.

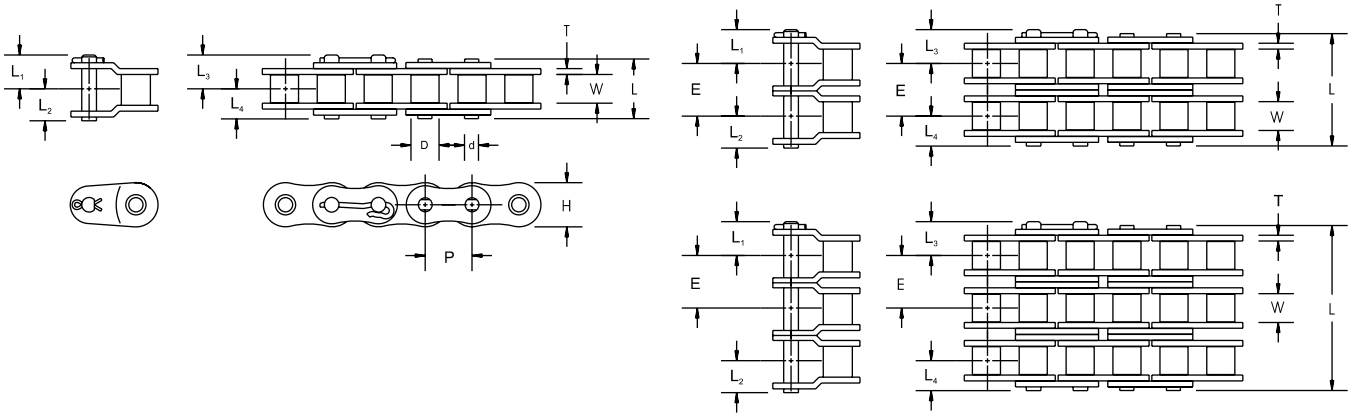


TABLE 3. 80-1 THROUGH 80-8, 100-1 THROUGH 100-8

Chain No.	Pitch	Min. Roller Link Inside Width	Roller Dia.	Link Plate		Pin Dia.	Transverse Pitch	Pin					Average Tensile Strength Through-Hardened Pin	Average Weight	Riveted	Cottered
	P	W	D	H	T	d	E	L	L_1	L_2	L_3	L_4				
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	lbf.	lbs./ft.		
80-1 through 80-8																
80-1	1.000	0.627	0.625	0.943	0.125	0.313	–	1.283	0.768	0.638	0.857	0.642	21,500	1.87	STD	STD
80-2	1.000	0.627	0.625	0.943	0.125	0.313	1.155	2.439	0.768	0.638	0.857	0.642	43,000	3.74	STD	STD
80-3	1.000	0.627	0.625	0.943	0.125	0.313	1.155	3.594	0.768	0.638	0.857	0.642	64,500	5.60	STD	STD
80-4	1.000	0.627	0.625	0.943	0.125	0.313	1.155	4.749	0.768	0.638	0.857	0.642	86,000	7.44	MTO	STD
80-5	1.000	0.627	0.625	0.943	0.125	0.313	1.155	5.904	0.768	0.638	0.857	0.642	107,500	9.03	MTO	STD
80-6	1.000	0.627	0.625	0.943	0.125	0.313	1.155	7.059	0.768	0.638	0.857	0.642	129,000	10.82	MTO	STD
80-8	1.000	0.627	0.625	0.943	0.125	0.313	1.155	9.369	0.768	0.638	0.857	0.642	172,000	14.43	MTO	STD
100-1 through 100-8																
100-1	1.250	0.755	0.750	1.180	0.156	0.375	–	1.595	0.908	0.785	0.912	0.785	33,000	2.80	STD	STD
100-2	1.250	0.755	0.750	1.180	0.156	0.375	1.411	2.981	0.908	0.785	0.912	0.785	66,000	5.60	STD	STD
100-3	1.250	0.755	0.750	1.180	0.156	0.375	1.411	4.392	0.908	0.785	0.912	0.785	99,000	8.47	MTO	STD
100-4	1.250	0.755	0.750	1.180	0.156	0.375	1.411	5.803	0.908	0.785	0.912	0.785	132,000	11.11	MTO	STD
100-5	1.250	0.755	0.750	1.180	0.156	0.375	1.411	7.214	0.908	0.785	0.912	0.785	165,000	13.97	MTO	STD
100-6	1.250	0.755	0.750	1.180	0.156	0.375	1.411	8.625	0.908	0.785	0.912	0.785	198,000	16.72	MTO	STD
100-8	1.250	0.755	0.750	1.180	0.156	0.375	1.411	11.447	0.908	0.785	0.912	0.785	264,000	22.29	MTO	STD

Dimensions are subject to change. Contact Timken Drives to obtain certified prints for design and construction.

120-1 THROUGH 120-8
121-1 THROUGH 121-3 (121 SERIES REPLACES 472 SERIES)

- Available in carbon steel.
- Cut-to-length chain available.
- Corrosion-resistant finishes for components available upon request.
- Offsets not recommended. Please contact Timken Drives engineering.
- Specially designed hook cotters used on sizes 120 and 121.
- Heavy chain series available/MTO.
- 121 series replaces 472 series.

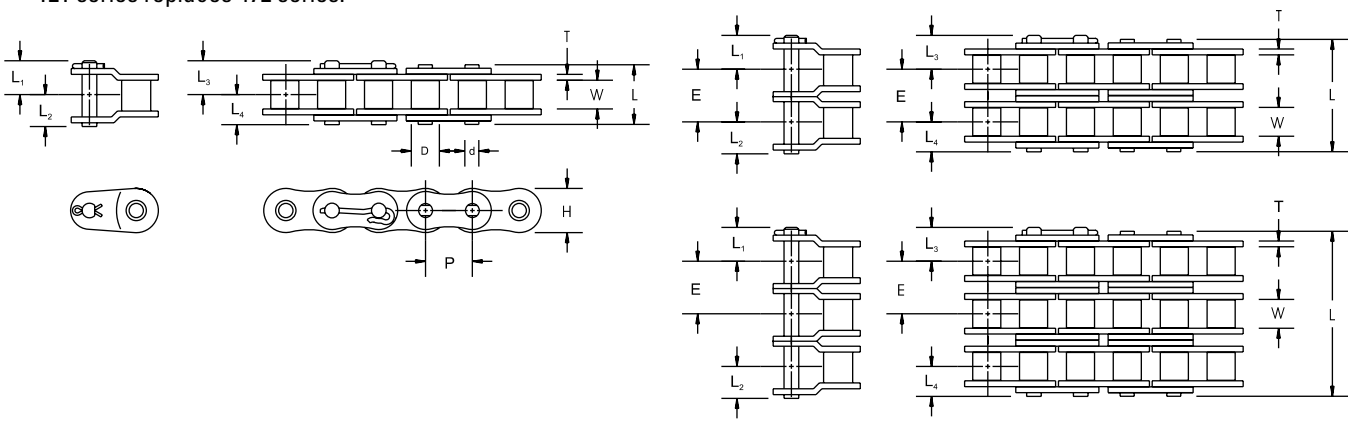


TABLE 4. 120-1 THROUGH 120-8, 121-1 THROUGH 121-3 (121 SERIES REPLACES 472 SERIES)

Chain No.	Pitch	Min. Roller Link Inside Width	Roller Dia.	Link Plate		Pin Dia.	Transverse Pitch	Pin					Average Tensile Strength Through-Hardened Pin	Average Weight	Riveted	Cottered
	P	W	D	H	T	d	E	L	L_1	L_2	L_3	L_4				
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	lbf.	lbs./ft.		
120-1 through 120-8																
120-1	1.500	1.000	0.875	1.425	0.187	0.437	–	1.955	1.119	1.071	1.119	0.989	45,100	4.14	STD	STD
120-2	1.500	1.000	0.875	1.425	0.187	0.437	1.789	3.767	1.119	1.071	1.119	0.989	90,200	8.27	STD	STD
120-3	1.500	1.000	0.875	1.425	0.187	0.437	1.789	5.556	1.119	1.071	1.119	0.989	135,300	12.10	MTO	STD
120-4	1.500	1.000	0.875	1.425	0.187	0.437	1.789	7.345	1.119	1.071	1.119	0.989	180,400	16.17	MTO	STD
120-5	1.500	1.000	0.875	1.425	0.187	0.437	1.789	9.134	1.119	1.071	1.119	0.989	225,500	20.24	MTO	STD
120-6	1.500	1.000	0.875	1.425	0.187	0.437	1.789	10.923	1.119	1.071	1.119	0.989	270,600	24.20	MTO	STD
120-8	1.500	1.000	0.875	1.425	0.187	0.437	1.789	14.501	1.119	1.071	1.119	0.989	360,800	32.27	MTO	STD
121-1 through 121-3																
121-1	1.500	0.750	0.875	1.425	0.187	0.437	–	1.955	–	–	0.994	0.864	45,100	3.30	STD	STD
121-2	1.250	0.755	0.750	1.180	0.156	0.375	1.546	3.274	–	–	0.994	0.864	90,200	6.76	MTO	STD
121-3	1.250	0.755	0.750	1.180	0.156	0.375	1.546	4.820	–	–	0.994	0.864	135,300	10.08	MTO	STD

Dimensions are subject to change. Contact Timken Drives to obtain certified prints for design and construction.

140-1 THROUGH 140-8, 160-1 THROUGH 160-8 AND 180-1 THROUGH 180-4

- Available in carbon steel.
- Cut-to-length chain available.
- Corrosion-resistant finishes for components available upon request.
- Offsets not recommended. Please contact Timken Drives engineering.
- Specially designed hook cotters used on sizes 140, 160 and 180.
- Heavy chain series available/MTO.

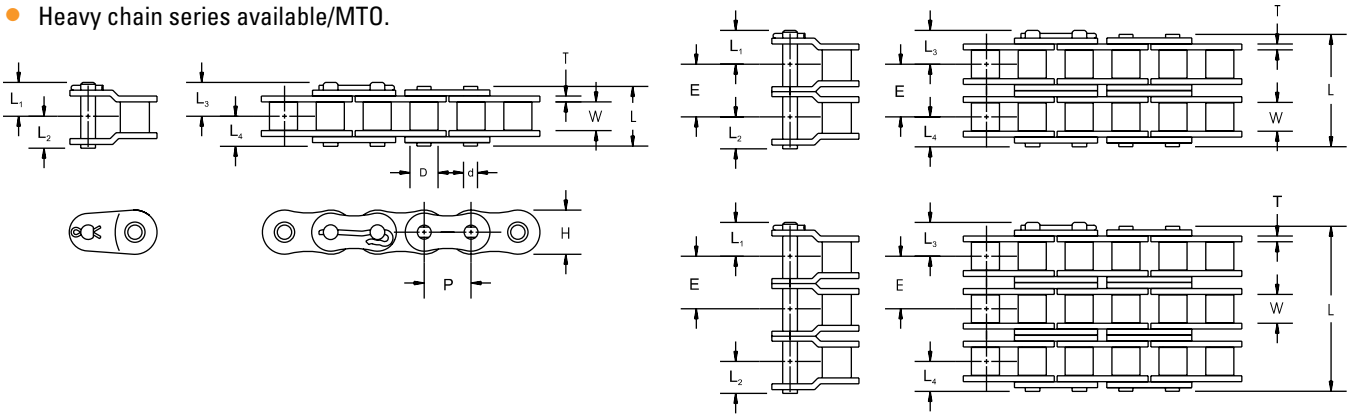


TABLE 5. 140-1 THROUGH 140-8, 160-1 THROUGH 160-8 AND 180-1 THROUGH 180-4

Chain No.	Pitch	Min. Roller Link Inside Width	Roller Dia.	Link Plate		Pin Dia.	Transverse Pitch	Pin					Average Tensile Strength Through-Hardened Pin	Average Weight	Riveted	Cottered
	P	W	D	H	T	d	E	L	L_1	L_2	L_3	L_4				
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	lbf.	lbs./ft.		
140-1 through 140-8																
140-1	1.750	1.000	1.000	1.663	0.220	0.500	–	2.136	1.253	1.150	1.253	1.068	57,450	5.14	STD	STD
140-2	1.750	1.000	1.000	1.663	0.220	0.500	1.924	4.060	1.253	1.150	1.253	1.068	114,900	10.27	STD	STD
140-3	1.750	1.000	1.000	1.663	0.220	0.500	1.924	5.984	1.253	1.150	1.253	1.068	172,350	15.29	MTO	STD
140-4	1.750	1.000	1.000	1.663	0.220	0.500	1.924	7.908	1.253	1.150	1.253	1.068	229,800	20.46	MTO	STD
140-5	1.750	1.000	1.000	1.663	0.220	0.500	1.924	9.832	1.253	1.150	1.253	1.068	287,250	25.52	MTO	STD
140-6	1.750	1.000	1.000	1.663	0.220	0.500	1.924	11.756	1.253	1.150	1.253	1.068	344,700	30.69	MTO	STD
140-8	1.750	1.000	1.000	1.663	0.220	0.500	1.924	15.604	1.253	1.150	1.253	1.068	459,600	40.92	MTO	STD
160-1 through 160-8																
160-1	2.000	1.250	1.126	1.899	0.252	0.563	–	2.538	1.454	1.370	1.454	1.269	72,800	6.60	STD	STD
160-2	2.000	1.250	1.126	1.899	0.252	0.563	2.305	4.843	1.454	1.370	1.454	1.269	145,600	13.21	STD	STD
160-3	2.000	1.250	1.126	1.899	0.252	0.563	2.305	7.148	1.454	1.370	1.454	1.269	218,400	20.79	MTO	STD
160-4	2.000	1.250	1.126	1.899	0.252	0.563	2.305	9.453	1.454	1.370	1.454	1.269	291,200	27.83	MTO	STD
160-5	2.000	1.250	1.126	1.899	0.252	0.563	2.305	11.758	1.454	1.370	1.454	1.269	364,000	34.76	MTO	STD
160-6	2.000	1.250	1.126	1.899	0.252	0.563	2.305	14.063	1.454	1.370	1.454	1.269	436,800	41.69	MTO	STD
160-8	2.000	1.250	1.126	1.899	0.252	0.563	2.305	18.673	1.454	1.370	1.454	1.269	582,400	55.50	MTO	STD
180-1 through 180-4																
180-1	2.250	1.400	1.406	2.132	0.281	0.687	–	2.780	1.561	1.390	1.561	1.390	95,000	9.10	STD	STD
180-2	2.250	1.400	1.406	2.132	0.281	0.687	2.592	5.372	1.561	1.390	1.561	1.390	190,000	18.10	STD	STD
180-3	2.250	1.400	1.406	2.132	0.281	0.687	2.592	7.964	1.561	1.390	1.561	1.390	285,000	27.01	MTO	MTO
180-4	2.250	1.400	1.406	2.132	0.281	0.687	2.592	10.556	1.561	1.390	1.561	1.390	380,000	35.91	MTO	MTO

Dimensions are subject to change. Contact Timken Drives to obtain certified prints for design and construction.

200-1 THROUGH 200-4, 264-1 THROUGH 264-4 240-1 THROUGH 240-4 AND 241-1

- Available in carbon steel.
- Cut-to-length chain available.
- Corrosion-resistant finishes for components available upon request.
- Offsets not recommended. Please contact Timken Drives engineering.
- T-pin cotters used on sizes 200, 264, and 240 oil field chain.
- Heavy chain series available/MTO.

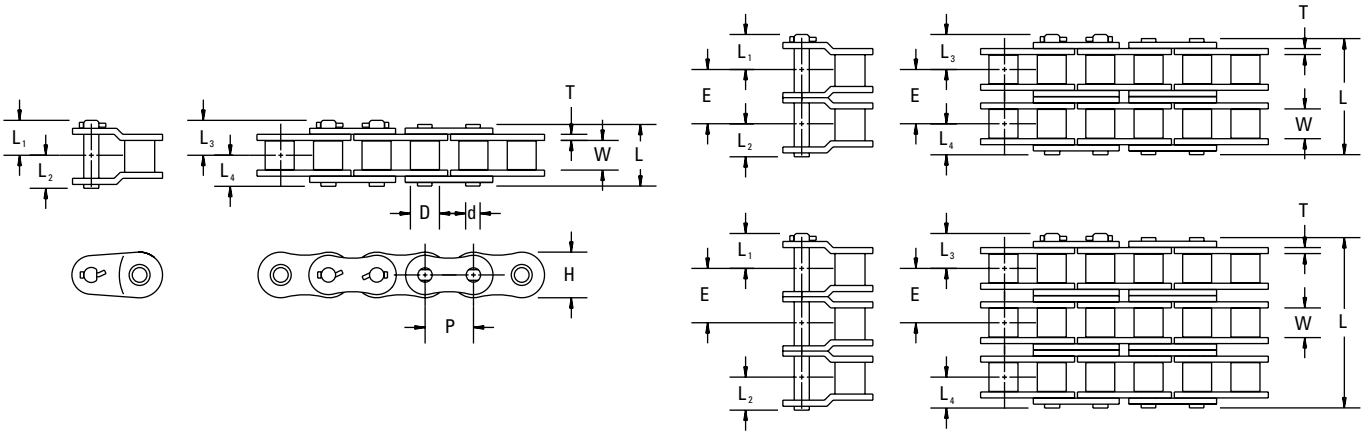


TABLE 6. 200-1 THROUGH 200-4, 264-1 THROUGH 264-4, 240-1 THROUGH 240-4 AND 241-1

Chain No.	Pitch	Min. Roller Link Inside Width	Roller Dia.	Link Plate		Pin Dia.	Transverse Pitch	Pin					Average Tensile Strength Through-Hardened Pin	Average Weight	Riveted	Cottered
	P	W	D	H	T	d	E	L	L_1	L_2	L_3	L_4				
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	lbf.	lbs./ft.		
200-1 through 200-4																
200-1	2.500	1.500	1.562	2.312	0.312	0.781	–	3.088	1.889	1.544	1.889	1.544	100,000	10.90	STD	STD
200-2	2.500	1.500	1.562	2.312	0.312	0.781	2.817	5.905	1.889	1.544	1.889	1.544	200,000	21.00	STD	STD
200-3	2.500	1.500	1.562	2.312	0.312	0.781	2.817	8.722	1.889	1.544	1.889	1.544	300,000	31.50	MTO	STD
200-4	2.500	1.500	1.562	2.312	0.312	0.781	2.817	11.539	1.889	1.544	1.889	1.544	400,000	42.10	MTO	MTO
264-1 through 264-4																
264-1	2.500	1.490	1.562	2.375	0.375	0.875	–	3.687	2.015	1.672	2.015	1.672	135,000	12.40	STD	STD
264-2	2.500	1.490	1.562	2.375	0.375	0.875	3.083	6.770	2.015	1.672	2.015	1.672	270,000	24.90	STD	STD
264-3	2.500	1.490	1.562	2.375	0.375	0.875	3.083	9.853	2.015	1.672	2.015	1.672	405,000	37.30	MTO	STD
264-4	2.500	1.490	1.562	2.375	0.375	0.875	3.083	12.936	2.015	1.672	2.015	1.672	540,000	49.80	MTO	STD
240-1 through 240-4																
240-1	3.000	1.864	1.875	2.812	0.375	0.937	–	3.708	2.212	1.854	2.212	1.854	152,200	16.40	STD	STD
240-2	3.000	1.864	1.875	2.812	0.375	0.937	3.458	7.166	2.212	1.854	2.212	1.854	304,400	32.20	MTO	STD
240-3	3.000	1.864	1.875	2.812	0.375	0.937	3.458	2.780	2.212	1.854	2.212	1.854	456,600	49.40	MTO	STD
240-4	3.000	1.864	1.875	2.812	0.375	0.937	3.458	7.166	2.212	1.854	2.212	1.854	608,800	65.70	MTO	STD
241-1																
241-1	3.000	1.250	1.875	2.812	0.375	0.937	–	3.094	–	–	1.905	1.547	152,200	16.20	MTO	MTO

Dimensions are subject to change. Contact Timken Drives to obtain certified prints for design and construction.

A.P.I. 7F HEAVY-SERIES OIL FIELD ROLLER CHAIN PRODUCTS

Ballized link plate holes – Provides increased bearing area for optimum press fits, improving fatigue life and working loads.

Through-Hardened Pins – Provides a higher working load capacity and additional resistance to fatigue in high load/pulsating type applications.

HZ series chains have the same dimensions as ANSI standard heavy-series chains.

- Connecting link available in cottered/press fit or slip fit.
- Please consult Timken Drives engineering for maximum allowable loads.
- Size 264 chain is produced with a heavy-series sideplate (0.375 in. thick plate material) and a larger diameter pin, which provides greater tensile strength/working load, and is a direct replacement for 200H chain.

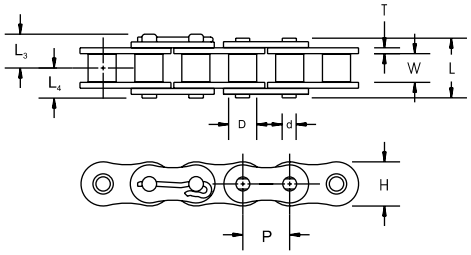


TABLE 7. A.P.I. 7F HEAVY-SERIES OIL FIELD ROLLER CHAIN PRODUCTS

Chain No.	Pitch	Min. Roller Link Inside Width	Roller Dia.	Link Plate		Pin. Dia.	Transverse Pitch	Pin			Average Tensile Strength Through-Hardened Pins	Average Weight	Riveted	Cottered
	P	W	D	H	T	d		L	L_3	L_4				
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	lbf.	lbs./ft.		
60HZ-1	0.750	0.500	0.469	0.709	0.125	0.234	1.028	1.140	0.650	0.570	12,500	1.27	STD	MTO
80HZ-1	1.000	0.625	0.625	0.949	0.156	0.312	1.283	1.413	0.839	0.707	21,500	2.24	STD	STD
100HZ-1	1.250	0.750	0.750	1.186	0.187	0.375	1.539	1.725	0.993	0.863	33,000	3.28	STD	STD
120HZ-1	1.500	1.000	0.875	1.425	0.219	0.437	1.925	2.085	1.186	1.043	45,100	4.61	STD	STD
140HZ-1	1.750	1.000	1.000	1.663	0.250	0.500	2.055	2.260	1.313	1.130	57,450	5.80	STD	STD
160HZ-1	2.000	1.250	1.126	1.899	0.283	0.563	2.437	2.673	1.520	1.339	72,800	7.55	STD	STD
180HZ-1	2.250	1.400	1.406	2.132	0.312	0.687	2.716	2.968	1.641	1.484	95,000	10.25	MTO	MTO
264Z-1	2.500	1.490	1.562	2.375	0.375	0.875	3.083	3.344	2.015	1.672	135,000	12.40	MTO	STD
240HZ-1	3.000	1.875	1.875	2.850	0.500	0.937	3.984	4.265	2.453	2.157	217,000	19.57	MTO	MTO

Dimensions are subject to change. Contact Timken Drives to obtain certified prints for design and construction.

HZ COTTERED SERIES

HZ cottered series chains contain wide waist link plates to improve stress distribution, increase fatigue strength, and reduce vibration. HZ cottered chains contain ballized plates to increase bearing area for optimum press fits, improving fatigue life and working loads. This special ballizing process is completed after heat treatment which is key to achieving superior loading capacity and fatigue strength. The HZ cottered series chains also contain through-hardened pins for higher working load capacity and additional resistance to fatigue in heavy load applications.

A.P.I. 7F OIL FIELD ROLLER CHAIN PRODUCTS

POWER TONG CHAINS

Power tongs are used to spin and tighten up drill pipe, casing, tubing or other types of pipe. In some instances, they also are used to apply the final makeup torque. The chain used on the power tongs is designed to grip the pipe. Timken Drives supplies individual boxes of power tong chains that are cut to the specified length required for the power tong you have. Please contact your Timken Drives seller for availability of your power tong chain.

TIMKEN DRIVES SPECIALTY CHAIN PRODUCTS

Silver Shield CR® series chains are available for applications that may be subjected to wet, caustic or acidic environments. Silver Shield CR chains consist of Timken Drives' precision carbon-steel components, specially coated with a zinc-aluminium-tin compound. Contact Timken Drives engineering for proper use of the Silver Shield CR chain coatings.

With a major focus on problem solving, Timken Drives designed Extended Life CHP® series chain for toughness and strength. The chrome plating on the pins exceeds the hardness level commonly found in standard roller chains and provides exceptional wear resistance without giving up toughness, even in dry and abrasive environments.

Fig. 6. Specialty drive chain product.

50WR WRENCH CHAIN

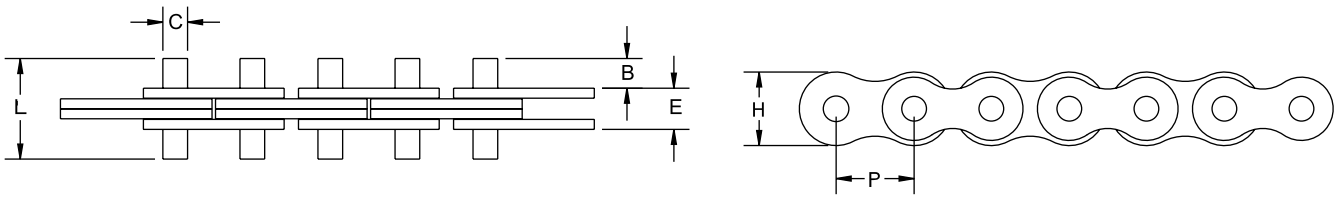
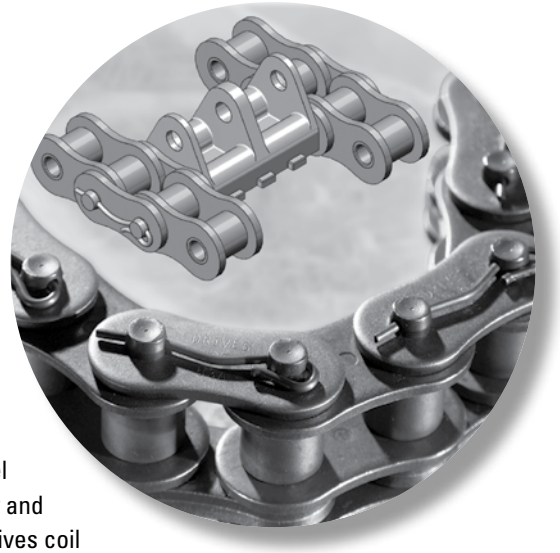


TABLE 8. 50WR WRENCH CHAIN PRODUCT SPECIFICATIONS

Chain No.	Pitch P	Lacing	Pin Dia. C	Pin Over All Length L	Pin Projection B	Link Plate H	Width Over Link Plate E	Average Tensile Strength Case-Hardened Pin	Average Weight
	in.		in.	in.	in.	in.	in.	lbf.	lbs./ft.
50WR	0.625	2X2	0.2	0.806	0.238	0.59	0.33	6,000	0.50



COIL TUBING INJECTOR KITS

As chains interact with the injector sprockets, positioned gripper blocks secure the tubing to advance or retract the coil within the well. Special chain pins manufactured from alloy steel are through-hardened for ductility and fatigue resistance. Use Timken Drives coil tubing injector chain kits with OEM Carrier/Gripper blocks. Contact Timken Drives for additional kits.

COIL TUBING INJECTOR CHAIN TO FIT OEM GRIPPER BLOCKS

Premium oil field chain features include:

- All ballized plates.
- Wide waisted link plates.
- Through-hardened shotpeened pins.
- Special hook cotter.
- Coated T-pin.

Please call your nearest location for sales and service.

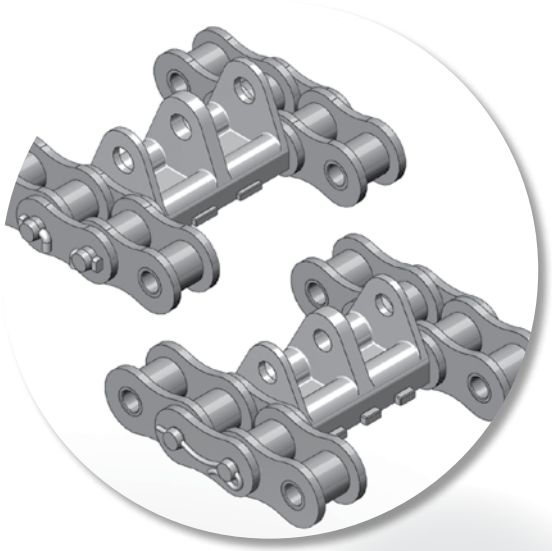
TABLE 9. COIL TUBE CHAIN KITS AVAILABLE

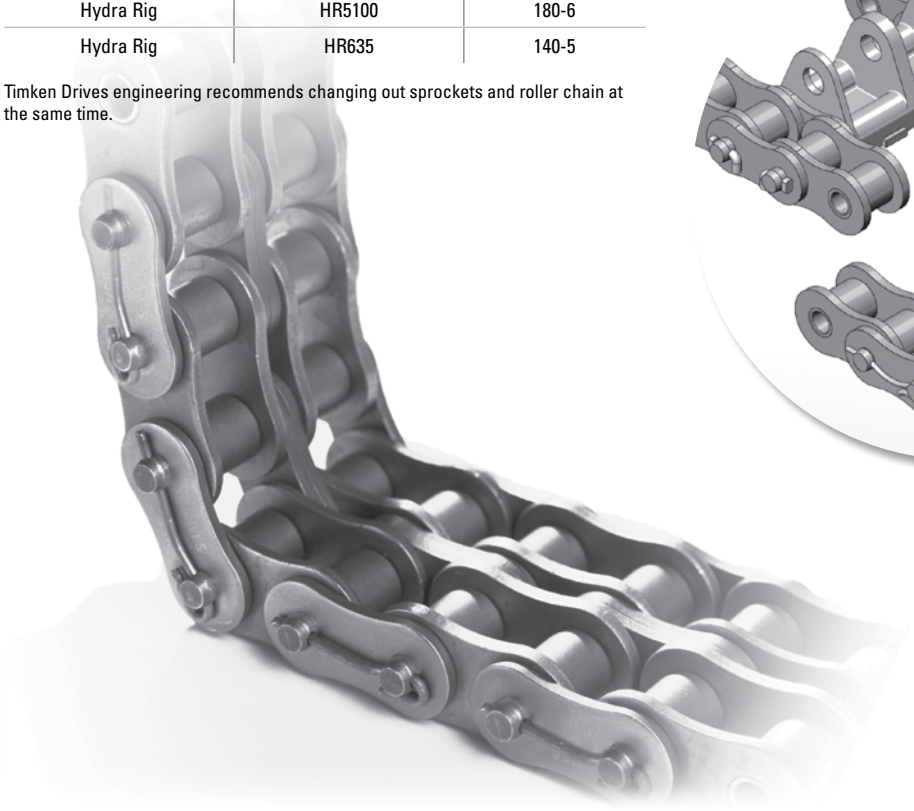
Manufacturer	Coiled Tube Unit Model	Chain Size
National Oilwell	RT10	120-3
National Oilwell	RT20	120-3
National Oilwell	RT30	120-3
National Oilwell	RT3238	120-3
National Oilwell	RT25	120-3
National Oilwell	RT60	160-4
National Oilwell	RT100	160-4
Hydra Rig	HR560/660	180-4
Hydra Rig	HR580/680	200-4
Hydra Rig	HR440	180-3
Hydra Rig	HR480	200-3
Hydra Rig	HR5100	180-6
Hydra Rig	HR635	140-5

Timken Drives engineering recommends changing out sprockets and roller chain at the same time.

TABLE 10. COIL TUBE CHAIN ASSEMBLIES AVAILABLE

Manufacturer	Coiled Tube Unit Model	Chain Size	Strand	Number of Strands Required
Stewart & Stevenson	Short unit	160-1 w/D3	14 pitch	8
Stewart & Stevenson	Long unit	160-1 w/D3	14 pitch	10
Stewart & Stevenson	Short unit	160H-1 w/D3	14 pitch	8
Stewart & Stevenson	Long unit	160H-1 w/D3	14 pitch	10

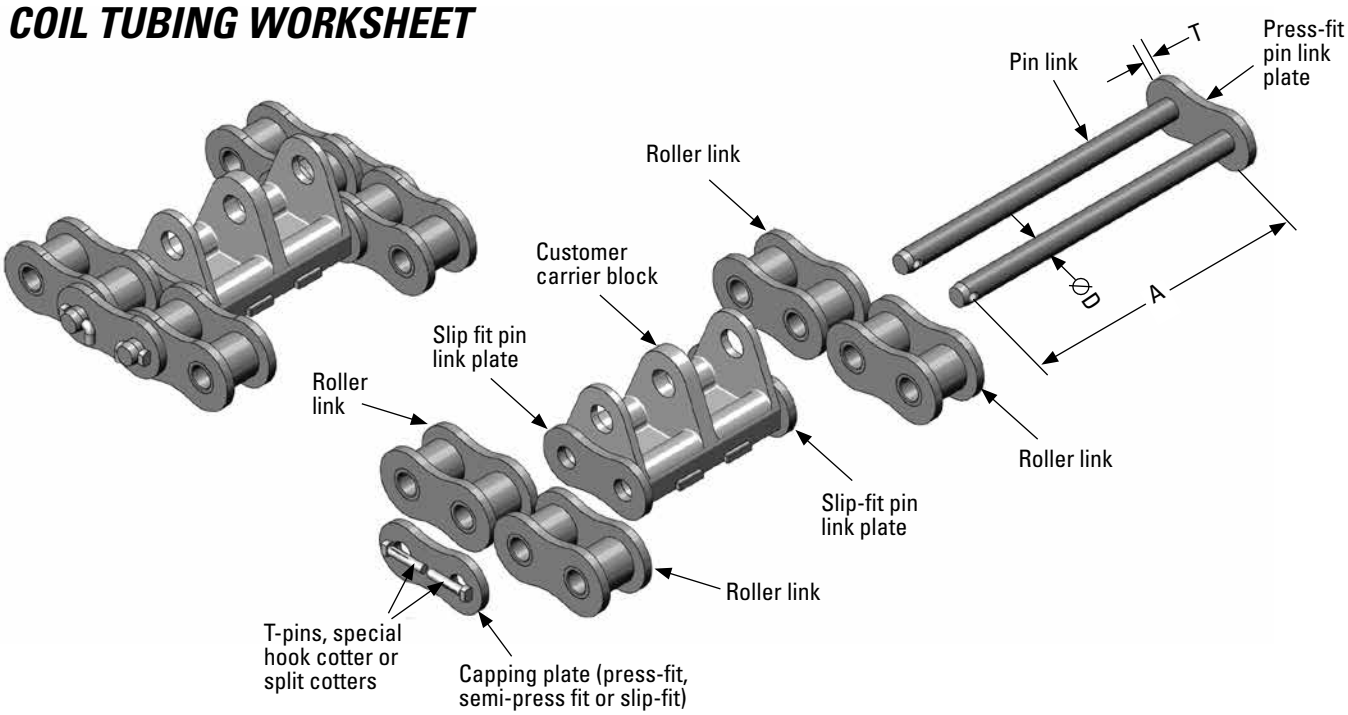




NOT SURE WHICH KIT YOU NEED?

Please see page 19 for our easy-to-use coil tube worksheet.

COIL TUBING WORKSHEET



COMPANY _____ CONTACT _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

TELEPHONE _____ FAX _____

NOTES _____

_____

Use this form to identify the chain and attachments you need. If you have any questions, please contact Timken Drives engineering at 800-435-0782.

Description	No.	A	D	T
		in.	in.	in.
ANSI Chain Number				
Pin				
Sidebar				

Note:

1. Semi press-fit plates are available on chain sizes 160, 180 and 200.
2. Hook cotters will be supplied on chain sizes 120-180.
3. T-pins will be supplied on chain sizes 200 and 240.

Kit Components	Quantity
Partial Pin Links	
Roller Links	
Middle Slip-Fit Plates	

Capping Plates	Quantity
Full Press-Fit	
Semi Press-Fit	
Slip-Fit	

Kit Components	Quantity
Hook Cotters	
T-Pins	
Split Cotters	

ADDITIONAL INFORMATION _____

_____

EZ CHAIN WEAR GAUGE®
CHECK THE LIFE OF YOUR CHAIN

STEP 1

Identify chain pitch size.

STEP 2

Locate the corresponding step on the gauge.

STEP 3

Check the gauge for fit between any two roller links. Perform with the chain in tension.

STEP 4

If the gauge step fits through the checkpoint, the chain is worn-out and needs to be replaced.

NOTE: The gauge should be in line, directly below any outside link plate.

Fig. 7. Step 1.

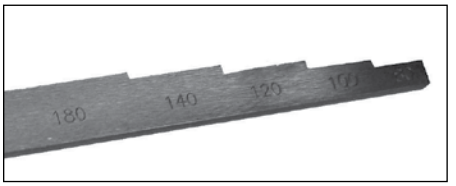


Fig. 8. Step 2.

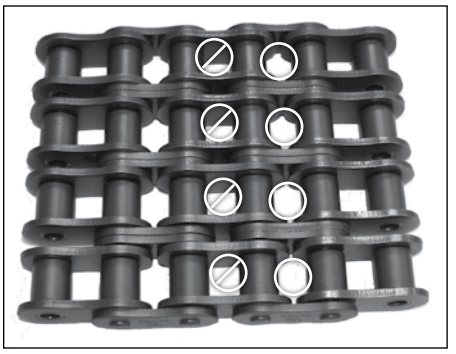


Fig. 9. Step 3.

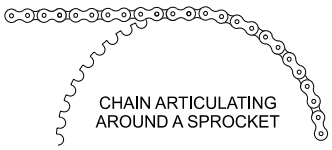
Fig. 10. Step 4.

GLOSSARY

A

Angle of Flex: The total angle of chain joint articulation as a chain enters or leaves a sprocket or wheel. The angle is equal to 360 degrees divided by the number of teeth in the sprocket.

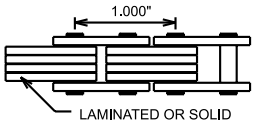
ANSI/ASME: The abbreviation for "American National Standards Institute"and "American Society of Mechanical Engineers" – the organization that sets the standards by which chains should be manufactured.



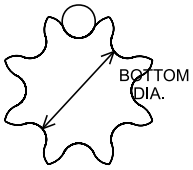
Articulation (v, "articulate"): The action of a chain joint flexing from straight, to an angle and back to straight as the joint enters and leaves the sprocket or other path, causing it to flex.

B

Backlash: Movement (if any) of the chain along the pitch line of the sprocket when the direction of chain travel is reversed.

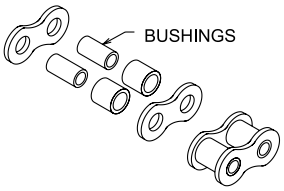


Block Chain: An alternative name used by some manufacturers for bar-link chain or for certain styles of leaf chain.



Bottom Diameter: The diameter of a circle measured between one tooth gap and the opposite gap for a sprocket with an even number of teeth.

Bushing: Internal component in a roller chain that the pin articulates around and the roller rotates on.



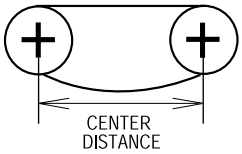
C

Cable Chain: See Leaf Chain.

Caliper Diameter: The distance measured between one tooth gap and the nearest opposite gap for a sprocket with an odd number of teeth.

Caterpillar Drive Chain: Chain with pushers that is used to drive drop forged chain.

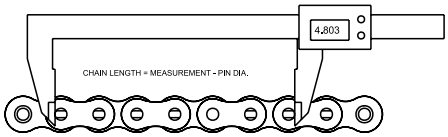
Center Distance: The distance between the centers of the shafts of a chain drive.

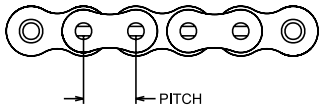


Chain Casing: An oil-retaining safety enclosure around a chain drive.

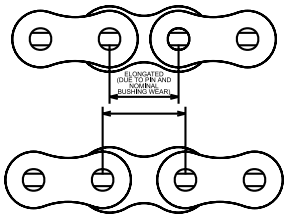
Chain Guard: An open guard of sheet metal, expanded metal or similar construction around a chain drive.

Chain Length: The actual chain length between the joint centers at each end of a taut chain strand. This distance is usually expressed in feet and/or inches or in pitches.



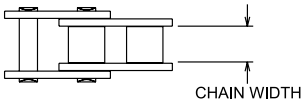


Chain Pitch (Nominal): The average distance between the joints (except for staggered pitch chains) of an assembled chain. In some cases, "joint," as defined here, will be a center of flexure not specifically identified with individual parts of the chain.

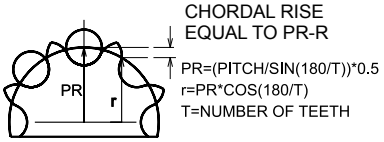


Chain Pitch Elongation or Chain Elongation: Increase in measured length due to wear or excessive load. Normally expressed in percent of length.

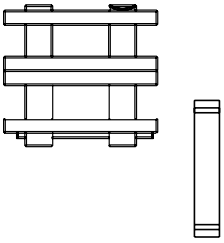
Chain Take-up: A mechanical device that takes-up chain slack. This could be an idler sprocket or similar device mounted on an adjustable bracket to adjust the slack in a chain installation.



Chain Width: Defined somewhat differently for various chains, but usually the inside width of the chain between the roller link plates.



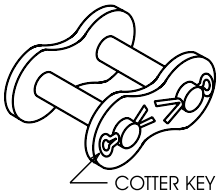
Chordal Effect (Chordal Action): The effect produced by the chain joint centers being forced to follow arcs instead of chords of the sprocket pitch circle.

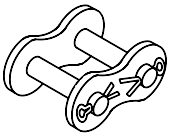


Clevis Connector: A connector used to connect a strand of leaf chain that has an inner-link end to a clevis block that has an inner-link configuration.

Clevis Pin: A pin used to connect a strand of leaf chain that has an inner link end to a clevis block that has an outer-link configuration. The clevis manufacturer should supply this part to help ensure that it will be compatible with the clevis block.

Compressive Stresses: Stresses that act to compress a material and place the material in compression.

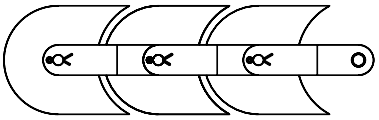




Connecting Link: For a roller chain, a pin link made with one link plate that is easily detachable to facilitate connecting or disconnecting the chain.

Cotter Key: The retaining pin for a connecting link.

Creep: The flow of plastic deformation of metals held for long periods of time at stresses lower than the normal yield strength. The effect is particularly important if the temperature of stressing is in the vicinity of the re-crystallization temperature of the metal.



Crescent Chain: Standard chain with a crescent-shaped top plate.

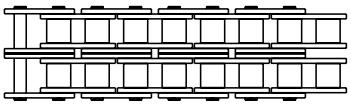
Curve Chain: Chain designed to bend around curves in the horizontal position.

Cycle: Change in load level as a chain completes a cycle around a system. Usually the change is from negligible load to a load peak on a regular basis as the chain undergoes a complete operation cycle.

D

Deep Link Conveyor Chain: Chain design with a carrier roller that protrudes down below the side bar but does not protrude above the side bar.

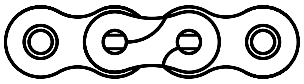
Design Horsepower: The specified horsepower for a chain drive multiplied by a service factor. It is the value used to select the chain size for the drive.



Double-Pitch Roller Chain: A roller chain having double the pitch of a standard roller chain, but otherwise having standard pins and bushings, and standard or over-size rollers.

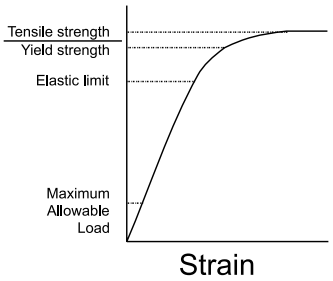
Duplex Roller Chain: Double strand chain (80-2) (double strand).

E



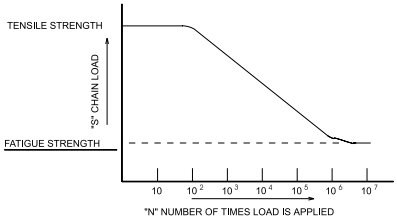
Elastic Limit: The highest load a part (e.g. chain strand) can sustain without incurring a permanent change in length.

Embrittlement: Reduction in ductility of materials due to exposure to certain environments or temperatures.



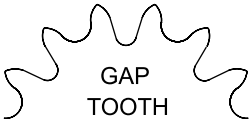
F

Fatigue Strength: Fatigue is the phenomenon leading to fracture under repeated fluctuating stresses having a maximum value less than the yield strength of material. Fatigue strength is the maximum stress that can be sustained for a specified number of cycles (10E7) without failure.



G

Galling: A condition on the load-bearing surface of a pin or bushing of a chain where excessive friction between high spots results in localized welding with subsequent tearing and a further roughening of the contact surfaces.



Gap Tooth Sprocket: An even-number tooth sprocket designed with clearance for a through rod or saddle. D-5 or GK1 attachment chains are used on this style sprocket.

H

Hardness: Chain hardness is typically measured in Vickers, Brinell or Rockwell.

Hoist Chain: Chain manufactured strictly for a lifting application.

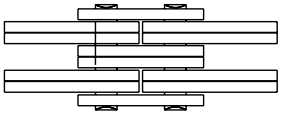
Hollow Pin Roller Chain: Chain manufactured using a bushing as the pin holding the pin link plates. This chain is generally used in pairs with the two strands running parallel and a through rod tying them together.

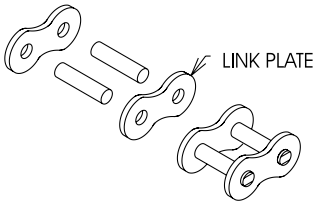
J

Joining Link: See Connecting Link.

L

Leaf Chain: A chain consisting of interlacing side plates and riveted pins. These chains are manufactured in accordance with ANSI standard B29.8. This chain is typically used in lifting and/or tensioning applications.





Length Tolerance: The length new chain must be within when measured under a given load.

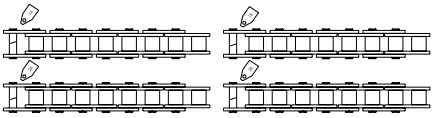
Link Plate: One of the side plates of either a pin link or a roller link in a roller chain.

Load Classification: A classification of drive loads based on the intensity of shock that is imposed on the drive.

Loading Frequency (Time): Loading frequency is the number of times per unit of time that the chain is exposed to a complete cycle of loading. A complete loading cycle normally occurs when a particular link moves completely around the system and returns to its starting point.

M

Master Link: See Connecting Link.

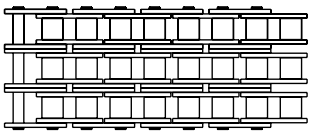


Matching and Tagging: When chains are required for multiple-strand operation, it is important to specify to the manufacturer "matched and tagged chain" together with the number of strands required. The chains will then be measured at the factory and a number tag attached to each strand. Each matching group of strands is tagged with the same number and, whenever possible, will be wired and shipped together. The tags should not be removed until the chain is assembled. The strands must be coupled so that those with the same number are installed side by side. All standard chains must meet standard length tolerances. Matching chain strands ensures that sections of chain with lengths at opposite ends of the tolerance range are not placed together in the conveyor.

Maximum Allowable Load: The maximum tension a chain may safely be subjected to. This value should never be exceeded by actual design load factored by speed, temperature, and dynamic adjustments as applicable.

Measuring Load: The specified standard load under which a chain is to be measured for length (1 percent of tensile strength).

Number of Roller Chain Strands	Multiple Strand Factor
2	1.7
3	2.5
4	3.3
5	3.9
6	4.6



Multiple Strand Chain: In multiple strand, two or more chains are assembled side by side on common pins that maintain the alignment of the rollers in the several strands. In multiple strands, center plates are located between the strands of roller links. Center plates may be slip fit or press fit on the pin as agreed between the chain manufacturer and user. The hyphenated number suffix in the chain number denotes the number of strands: 2 a double strand; 3 a triple strand; 4 a quadruple strand chain; etc.

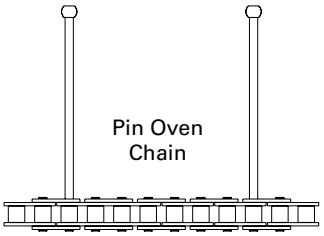
Multiple Strand Factor: A factor by which the horsepower rating of a single-strand chain is multiplied to obtain the horsepower capacity of a chain with two or more strands.

O

Offset Link: A special offset link, as termed in roller chain descriptions, made for use in straight link chain when an uneven number of links in the total strand is required.

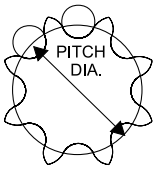
Offset Section: For a roller chain, a factory-assembled section, made up of a roller link and an offset link. Offset sections are used to connect strands of chain having an odd number of pitches.

Overchaining: A drive is overchained when it incorporates a chain of substantially higher rating than that indicated by normal selection procedures to had been necessary.



P

Pin Oven Chain: A chain used to convey cans through a drying oven. Typically 60 chain with an extended pin every 7th pitch is used.



Pitch: See Chain Pitch; Pitch Diameter.

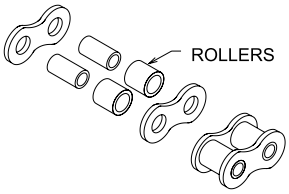
Pitch Diameter: The diameter of the sprocket pitch circle.

Press Fit: Standard designed interference fit between side-plate pitch hole and pin/bushing.

Prestressing (Dynamic): Dynamic prestressing is the process of subjecting chain to a load as it is articulated or wrapped around multiple sprockets. Dynamic prestressing is done to seat the chain components and to reduce initial (break-in) elongation in chain drives.

Prestressing (Static): Static prestressing is the process of subjecting chain to a load at a minimum of 20 percent of the ultimate strength. The chain is pulled in a straight line. Static prestressing is done to seat the chain components and to minimize the variation in strand lengths of attachment chain used in pairs.

Pulsation: Fluctuations of a cyclic nature in load or speed (See Chordal Action).



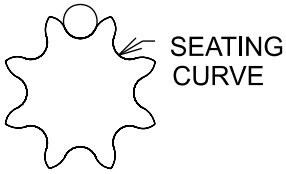
R

Rollers: The component on the chain which engages the sprocket. The roller allows the chain to roll into the sprocket. The roller rotates on the bushing.

Root Diameter: The theoretical bottom diameter of a sprocket, equal to the pitch diameter minus the chain roller or barrel diameter (See Bottom Diameter).

Run-in: The initial period of operation of any mechanism, during which the component parts seat themselves.

S



Scoring: Marring or scratching of a pin or bushing caused by metallic debris being picked up in the contact surfaces on one of the parts.

Seating Curve: A specific term for the pocket curve of a roller chain sprocket.

Seizing: Stiffening (or "freezing") of a chain joint as a result of roughness and high friction caused by galling. This occurs between the pin and bushing and/or link plates.

Semi-Press Fit (Tap Fit): Minimum interference fit between side plate and pin.

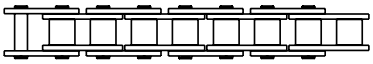
Service Factor: A factor by which the specified horsepower or working load of a chain is multiplied to compensate for operating conditions.

Sheave: A grooved wheel or pulley. Typically used with leaf chain to change its direction.

Shot Peening: Process which is used on the side plates to improve fatigue strength.

Sidebar: Another name for Link Plate.

Side Bow Chain: See Curve Chain.



Simplex Roller Chain: Single-strand chain (80) (single strand).

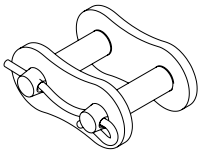
Sinter Bushing: Bushing made from powdered metal and then oil impregnated.

Skip Tooth: A sprocket designed such that the chain engages only every other tooth on the sprocket. Typically used with staggered pitch chain.

Slip Fit: No interference fit between side plate and pin.

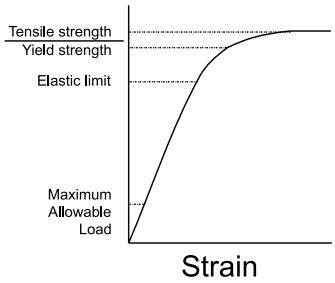
Slip Stick: Slip stick occurs when the motor drives continually and the sprocket rotates, but the chain moves ahead by stopping and starting at intervals. This could be caused by the following:

- Fluctuations in the coefficient of friction between bushing and rollers (i.e. rotating, sticking, rotating, sticking).
- Insufficient chain hardness on conveyor lines.
- Insufficient drive equipment or frame hardness.



Special Hook Cotter: The retaining pin for cotter-style chain and connecting links.

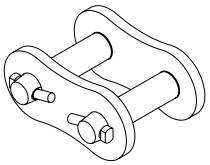
Staggered Pitch Chain: A chain with alternate links of differing pitches, one usually being considerably greater than the other.



T

Tensile Strength: See Ultimate Strength.

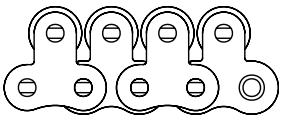
Tension Linkage: A chain application primarily transmitting motion back and forth or up and down at low speeds. A typical example is a forklift reciprocating system.



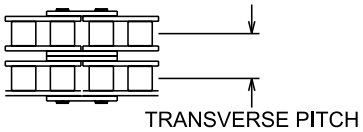
T-pin/T-head: The retaining pin for cotter-style chain and connecting links.

Tight Joint or Stiff Joint: Chain joint that does not articulate freely.

Top Roller Chain: Chain which has a roller on top to allow for accumulation of product on top of chain while the chain is moving.



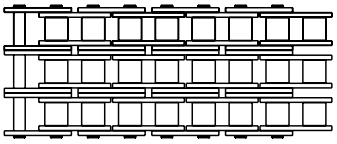
Torque: Torsional force, expressed in inch-pounds in chain calculations, which is the product of chain pull and one-half the sprocket pitch diameter.

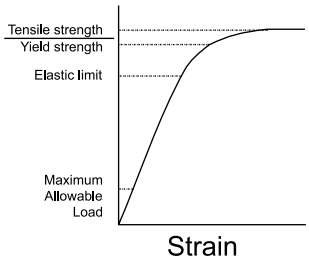


Transverse Clearance: Clearance between roller link plate and pin link plate.

Transverse Pitch: The lateral distance between the centerlines of each strand of multiple strand chain, or between the tooth profiles on a sprocket for a multiple strand chain.

Triplex Roller Chain: Triple strand chain (80-3) (triple strand).





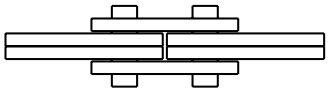
U

Ultimate Strength: The ultimate strength of a chain is the single maximum load that breaks the chain. Typically specified as either average or minimum.

Underchaining: A drive is underchained when it incorporates a chain of substantially lower rating than that indicated to be needed from normal selection procedures.

W

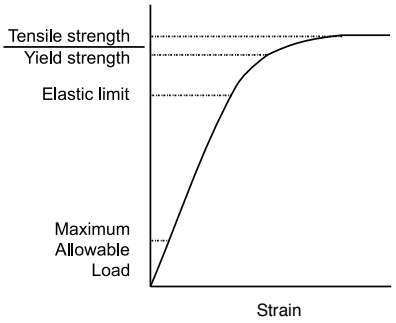
Working Load: An allowable recommended chain load used on conveyors, drives with nonstandard chains, or other applications of lower relative speed.



Wrench Chain: Wrench chains are leaf chains with pins extending beyond both sides of the chain. It serves as a tension linkage for holding pipe securely in pipe wrenches. The extended pins permit this chain to support a load not in line with the chain without danger of pulling the link plates off the pins. The pins are used to lock onto a mechanism to accommodate various pipe sizes.

Y

Yield Strength: The elastic limit or yield strength of a chain is the load that causes permanent elongation of the chain.



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